REMARKS

Summary of the Office Action

Claims 1-20 are considered in the Office action.

Claims 1-20 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9, 12 and 25 of Motamed U.S. Patent No. 6,327,047 ("Motamed").

Claim 20 has been rejected under 35 U.S.C. § 102(b) as anticipated by Wan et al. U.S. Patent No. 5,452,112 ("Wan").

Claims 1-3, 11-12 and 13 have been rejected under 35 U.S.C. § 103(a) as obvious over Buchar U.S. Patent No. 4,618,248 ("Buchar") in view of Takase U.S. Patent No. 5,249,068 ("Takase").

Claims 4 and 14 have been rejected under 35 U.S.C. § 103(a) as obvious over Buchar in view of Takase and Green et al. U.S. Patent No. 5,481,480 ("Green").

Claims 5 and 15 have been rejected under 35 U.S.C. § 103(a) as obvious over Buchar in view of Takase and Thompson U.S. Patent No. 6,143,454 ("Thompson").

Claims 6, 10, 16 and 19 have been rejected under 35 U.S.C. § 103(a) as obvious over Buchar in view of Takase and Ryu U.S. Patent No. 6,295,386 ("Ryu").

Claim 7 has been rejected under 35 U.S.C. § 103(a) as obvious over Buchar in view of Takase, Thompson and Ryu.

Claims 8 and 17 have been rejected under 35 U.S.C. § 103(a) as obvious over Buchar in view of Takase and Tesler et al. U.S. Patent No. 6,326,128 ("Tesler").

Claims 9 and 18 have been rejected under 35 U.S.C. § 103(a) as obvious over Buchar in view of Takase and Neiman U.S. Patent No. 5,698,287 ("Neiman").

Summary of the Reply

Applicant has amended claims 2-3, 6-8 and 11-19 to more particularly describe and distinctly claim the invention, and has cancelled claim 20 without prejudice. Applicant also submits herewith a terminal disclaimer to overcome the obviousness-type double patenting rejections.

Reply To Obviousness-Type Double Patenting Rejections

Applicant submits herewith a Terminal Disclaimer disclaiming the terminal part of any patent that issues on the present application that extends beyond the expiration date of U.S. Patent No. 6,327,047. Applicant submits that the accompanying Terminal Disclaimer obviates the obviousness-type double patenting rejections.

Reply to Rejections Under 35 U.S.C. § 103(a)

The claimed invention recites methods for automatically calibrating a scanner, the methods including affixing a calibration target to a scanning surface of the scanner, and calibrating the scanner with the calibration target during a normal scan. The claimed invention also recites apparatus for automatically calibrating a scanner, the apparatus comprising a calibration target, means for attaching the calibration target proximate to a scanning surface of the scanner, and means for automatically calibrating the scanner with the calibration target during a normal scan. The cited references do not describe or suggest the claimed invention.

Instead, Buchar describes a printing machine that includes a photoreceptor belt 10 having a photoconductive surface 12, and an optics assembly 36. (Col. 3, lines 30-33; Col. 3, lines 57-61; FIG. 1). Optics assembly 36 operates in either a normal document reproduction mode or a testing mode (also called an automatic setup mode). (Col. 2, lines 18-26; Col. 2, lines 33-35; Col. 3, lines 57-61). In normal document reproduction mode, optics assembly 36 scan-illuminates an original document 32 positioned on the surface of transparent platen 34, and projects a reflected image onto surface 12, forming thereon an electrostatic latent image corresponding to the informational areas contained within original document 32. (Col. 3, lines 57-60; Col. 4, lines 3-10). In an automatic setup mode, optics assembly 36 generates four alternating density patches onto the centerline of belt 10, which are then used to measure and control various parameters of the printing machine. (Col. 4, lines 12-16).

In particular, in a first phase of an automatic setup mode, scan carriage 45 is moved to various positions relative to platen 34, and test patches 100, 102, 104 and 106 are formed on the centerline of belt 10, with patches 102 and 104 formed by scanning target strip 92 located on a bottom surface of platen 34. (Abstract; Col. 2, lines 36-38;

Col. 6, line 34 through Col. 7, line 8; FIG. 5). Electrostatic voltmeter 52 is used to sense photoreceptor voltages at test patches 100, 102, 104 and 106. (Col. 7, lines 14-16). The measured voltages are compared to preset values, adjustments are made to various system parameters, and the patches are again formed in an iterative manner until measured the voltages converge on desired preset values. (Col. 5, line 59 through Col. 6, line 15; Col. 7, line 9 through Col. 8, line 7).

In a second phase of the automatic setup mode, scan carriage 45 is moved to park position 2, and patches 108 and 110 are formed along the centerline of belt 10, with patch 108 formed by scanning target strip 107 located on a bottom surface of platen 34. (Abstract; Col. 2, lines 36-38; Col. 8, lines 7-19). Patches 108 and 110 are measured by densitometer 64, which produces output signals proportional to the toner mass deposited on patches 108 and 110. (Col. 8, lines 25-32). If there is a difference between the signals, the voltage level at the patch generator is changed. (Col. 8, lines 32-36). This process is repeated until the two measured values are equal. (Col. 8, lines 37-45).

As the Office action acknowledges, unlike the claimed invention, Buchar does not describe or suggest methods or apparatus for calibrating a scanner with a calibration target during a normal scan. Instead, Buchar describes measuring and modifying various printer parameters during an automatic setup mode, and does not describe calibrating a scanner during normal document reproduction mode. Thus, Buchar actually points away from the claimed invention.

Takase also does not describe or suggest the claimed invention. Instead, Takase describes an image reading apparatus that includes a line sensor 1 having an array of photoelectric conversion elements (also referred to as charge-coupled devices) aligned along a main scan line, which is made by an optical lighting part over a surface of an original document in a main scanning direction. (Col. 2, lines 55-64; Col. 5, lines 46-52). In particular, line sensor 1 outputs a signal indicative of image information of the original document for one main scan line. (Col. 6, lines 30-32). The output signal has a waveform that includes a region labeled "WB," which indicates a waveform of a signal outputted by the photoelectric conversion elements when reading a reference white board provided outside an effective image reading range of the original document. (Col. 6, lines 40-44; FIG. 2). After the reference white board is scanned, line sensor 1 scans the effective image reading range of the original document. (Col. 6, lines 44-47).

Unlike the claimed invention, Takase does not describe or suggest a method for automatically calibrating a scanner, the method including affixing a calibration target to a scanning surface of the scanner, and calibrating the scanner with the calibration target during a normal scan. Further, Takase does not describe or suggest apparatus for automatically calibrating a scanner, the apparatus including a calibration target, means for attaching the calibration target proximate to a scanning surface of a scanner, or means for automatically calibrating the scanner with the calibration target during a normal scan. At most, Takase describes scanning a "reference white board." Takase does not describe or suggest that the reference white board is a calibration target, or that the reference white board is affixed to the surface of a scanner. Instead, Takase actually points away from the claimed invention by describing scanner calibration using a "reference white board" rather than a calibration target.

Further, there is no suggestion or motivation to combine Buchar and Takase, and it is unclear how the two disparate references could somehow be combined. Buchar describes measuring and modifying various printer parameters during an automatic setup mode, but not in a normal mode. Takase, in contrast, describes scanning a reference white board prior to scanning an original document. Thus, Takase seems to require scanning the reference white board during a normal scan, whereas Buchar seemingly cannot reasonably function during a normal mode.

Similarly, none of the other cited references describe or suggest scanner calibration methods including affixing a calibration target to a scanning surface of the scanner, and calibrating the scanner with the calibration target during a normal scan, or scanner calibration apparatus including a calibration target, means for attaching the calibration target proximate to a scanning surface of a scanner, or means for automatically calibrating the scanner with the calibration target during a normal scan.

Because the cited references do not describe or suggest the claimed invention, applicant respectfully requests that the § 103 rejections of independent claims 1 and 11 be withdrawn. Because all other claims depend from claims 1 and 11, applicant respectfully requests that the § 103 rejections of claims 1-19 be withdrawn.

Conclusion

For the reasons stated above, applicant submits that this application, including claims 1-19, is allowable. Applicant therefore respectfully requests that the Examiner allow this application.

Respectfully submitted,

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